Mindset Matters in Mathematics: What Teachers can do About It

Mentioning mathematics in a social setting, often brings at least one groan or eye roll from the group and is often followed by a sentiment along the lines of someone hating or being bad at math. Mention the fact that you are a math teacher, and the comments range from “you must be a Saint” to “math was my least favorite subject.” Other subjects are not immune to disparaging comments, but mathematics has developed a reputation of being a challenging and easily unlikable subject. Society has become okay with people just not being good at math. It is not uncommon for a person to describe themselves as being bad at math and having a number of people commiserate with them. However, if a person were to express that they could not read, people would likely react with shock and even anger, demanding to know what the cause of this oversight was. What is it about mathematics that gives people licence to hate it? Is mathematics itself to blame or is it perhaps the mindset society has about mathematics? How can teachers and parents work to combat this mindset about mathematics and foster a growth mindset in children?

Fixed vs. Growth Mindset

Carol Dweck’s theory of mindset and its impact on success has driven a significant amount of educational research in recent years. This research has pointed to the fact that a child’s mindset about intelligence, learning, and their abilities has a significant impact on their success. The two mindsets that people tend to exhibit about intelligence and ability are fixed mindsets and growth mindsets. A fixed mindset is characterized by the belief that people have a certain amount of ability which is unchangeable. A growth mindset is characterized by the belief that hard work, perseverance, and help from others can help to change and grow ability (Haimovitz & Dweck, 2017). Dweck found that approximately 40% of the children in her studies held a fixed mindset, 40% held a growth mindset and 20% displayed both (Boaler, 2013). Those who display both may exhibit the characteristics of one or the other depending on the situation. For example, a
student may exhibit a growth mindset in sports, believing that the more they practice, the better they will play, but may not believe that they can get better at mathematics through practice. Thus they are exhibiting the belief that their athletic ability is not fixed, but their mathematical ability is (Lee, 2009).

Research has suggested that these different mindsets have a significant impact on a student’s success because they place the student on different paths in terms of motivation, goals and responses to setbacks. Fixed mindsets lead people to be performance oriented. When they are faced with a task, they see it as a test of their intelligence or ability. They are concerned with doing well so that they can validate their intelligence. If they do not do well, then they believe they do not have the intelligence or ability necessary to do better, and thus feel they are a failure. According to an individual with a fixed mindset, to work hard is to admit one does not have adequate innate ability and thus to work hard is weakness. Therefore, individuals with a fixed mindset avoid difficult tasks that challenge their abilities and give up easily when difficult things are asked of them (Haimovitz & Dweck, 2017). A growth mindset, on the other hand, allows individuals to view difficult tasks as an opportunity for learning, growing their abilities, and increasing their intelligence. Therefore, they see struggling as a productive process towards this goal of learning and they see setbacks as opportunities to persevere through difficult tasks so that they can learn more. Students who possess a growth mindset are motivated to learn because they believe their intelligence is something they can change, while students with a fixed mindset are less motivated to learn because they do not believe they can improve (Haimovitz & Dweck, 2017). The belief in a growth mindset does not negate the fact that there are differences in people’s abilities, but it establishes the fact that everybody, regardless of their current level of ability can improve (Dweck, 2008).

Brain Plasticity

The belief that everyone can improve their abilities through hard work and proper training, while having proven impact on learning outcomes, is also backed up by studies in neuroscience. Recent research has resulted in the understanding of the concept of brain plasticity. The predominant belief of the past was that the brain could not grow or change and the brain a person was born with, they were stuck with. Research on brain plasticity has disproved this notion. Connections in the brain are called synapses. New synapses are formed when we learn something new- whether it be an action, movement, fact, process, etc. The more times this idea
or movement is revisited, the stronger the synaptic connection becomes, creating a structural pathway (Boaler, 2016, p. 1-3). While scientists previously understood the formation of synapses, they thought that the brain possessed a fixed capacity for connections. This belief has changed based on recoveries of people from brain injuries as well as studies on London Cab Drivers. London Cab Drivers undergo extensive training and study of the different streets and routes in London, learning over 25,000 streets and 20,000 landmarks. This training requires the use of the hippocampus, which is the part of the brain responsible for spatial reasoning. Researchers measured brain activity of London Cab Drivers before and after they began their training and found that their hippocampuses had grown in response to the extensive training and they also found that the hippocampuses of retired cab drivers shrank back down when they were not using that spatial reasoning as extensively. The researchers compared the cab drivers to bus drivers, who only learn simple routes around the city, and found that the bus drivers did not exhibit the same brain growth, showing that the extensive and complex training of the cab drivers is what grew their brains (Boaler, 2016, p. 1-3).

Further showing that the brain can grow and change is the case of a nine year old girl who had the left hemisphere of her brain removed to stop the recurring seizures she was having. The surgery was successful, but since the left side of the brain is responsible for movement, she came out of surgery paralyzed. The expectation was that she would remain paralyzed or at least disabled, but she began to regain movement in just a matter of weeks and now she has regained all movement, with only a limp. In essence, the right side of her brain had regrown in order to compensate for the left side that she lost (Boaler, 2016, p. 3-4). If such dramatic brain changes can happen in this case and that of the London Cab Drivers, then with the proper strategies, instruction, motivation, and tasks, all students can grow their brains and improve their abilities.

The Effect of Praise and Feedback on Mindset

Since all students are capable of growing their brains and improving their ability, they need access to the opportunities and tools that will enable them to tap into this potential. Ultimately, the effect of growth mindset is on the motivation and goal setting of students, which in turn results in actions on the student’s part that result in higher achievement. It is therefore paramount that the students develop a growth mindset for themselves. Unfortunately, society in the United States has done a better job of fostering a fixed mindset in children in recent years...
than that of a growth mindset - all in an attempt to bolster self esteem in children. The self-esteem movement told parents and teachers to continually praise children to help bolster their self-esteem, but this bolstering of their self-esteem may have created a culture of fixed mindsets. Praise meant to boost self-esteem focuses on the qualities of the person such as: “you’re so smart,” “you’re really good at this,” “you’re a good boy/girl,” “you did really well,” etc. All of these forms of praise focus on something the person is or how well they did which ends up creating feelings of failure for the child when they do not do as well the next time or do not perceive themselves as smart anymore if they encounter a difficult task or failure. Children who are praised for their intelligence and who they are, are more likely to have a fixed view of ability and intelligence and are less likely to believe they can improve their abilities. They are therefore more likely to choose easier tasks that they feel like they can succeed at without much effort, rather than challenging tasks that they can learn from (Haimovitz & Dweck, 2017).

Instead of praising the person, to foster a growth mindset, adults should praise the process and the effort that leads to success. When children are praised for working hard when they succeed, they are more likely to attempt more difficult tasks that lead to learning and they are more likely to persevere through challenges. While process praise has been found to be a far better indicator of growth mindset development, process praise can also be misused. In order for process praise to be effective, the process has to have resulted in a favorable outcome - either learning or achievement. If it did not, then by praising the effort, the child is receiving a message that the person praising them does not believe that they can achieve or learn and therefore instead of learning or achieving, they are just getting some praise for showing up. Therefore, it is important to praise effort and process genuinely and with fidelity, only doing so when the child truly did work hard or used good strategies which resulted in learning (Haimovitz & Dweck, 2017).

As with praise for good outcomes, adults’ responses to failures also help to develop a child’s ability mindset. Failure can be seen as either crippling or as an opportunity for learning. An adult who sees failure as crippling responds with disappointment when a child has failed something, thus communicating to the child that he or she is a disappointment because he or she did not perform as expected. Parents who see failure as an opportunity for learning and growth communicate to their children that they simply did not learn what they need to yet, which means there is still opportunity for them to learn and do better. Children who have parents who have an opportunistic view of failure feel that their parents are more focused on learning and effort rather
than their performance (Haimovitz & Dweck, 2017). While praise and responses to successes and failures are critical components in the development of ability mindsets in children, there are other factors that impact a child's mindset development and teachers are in the unique position to be able to impact a number of children at once by fostering a growth mindset culture in their classroom.

Math and Fixed Mindsets

Having and acting on a growth mindset has been found to be one indicator of successful academic growth in students and therefore studies have looked at what practices in the classroom impact the development and fostering of a growth mindset. A number of studies have been done specifically on the impact of a growth mindset in mathematics achievement. Math is a subject frequently plagued by a fixed mindset view of the subject as a whole. Many people believe that the focus of mathematics is getting the correct answer by following rules, procedures, and algorithms. Math is often thought of as a performance subject where students are asked to answer a series of questions with right or wrong answers (Boaler, 2016, p. 21). Jo Boaler in her book “Mathematical Mindsets” quoted a six year old who said: “math was too much answer time and not enough learning time” (Boaler, 2016, p. 21). If a six year old makes this statement about math class, then the problem with math education is pervasive even down to the youngest of students. If one were to ask a mathematician if mathematics is all about getting the answer right or wrong, they would likely say that mathematics is more than that, that it is about uncertainty, finding ways to solve problems, making sense of the world around them, finding patterns and using the patterns to describe and determine properties and ways to think about problems, etc. This description has much more to do with mathematical discovery and process than getting an answer right or wrong. It also leaves room for a growth mindset about mathematics because a student can be good at math by making connections, modeling, finding patterns and coming up with different methods for solving problems. If mathematics is all about getting the answer right or wrong, there is not room for a growth mindset because students are either good at getting the right answer or they seem to always be getting the wrong answer or not getting the right answer fast enough. The former students are the ones labeled as “good at math” and the latter ones are the ones labeled as “bad at math.”
Achievement Gaps

A fixed mindset about mathematics creates a culture of it being okay for people to give up on mathematics. This hurts student learning and is creating an achievement gap between the United States and other countries. People in the United States are more likely to hold a fixed mindset and believe that only some people have intelligence whereas individuals in other countries, specifically some Asian countries, believe that through effective effort, most people have the ability to become highly intelligent (Hwang, Reyes, & Eccles, 2019).

Hwang, Reyes and Eccles (2019) also determined that fixed mindsets are furthering the achievement gap between the high achievers and low achievers in mathematics in the United States. Their study looked at the differences in mindsets and their effects on achievement in different racial groups, genders, socioeconomic statuses and initial achievement levels from 10th to 12th grade. They found that students of a high socioeconomic status and majority racial groups were most likely to hold a fixed mindset and see natural intelligence as preferred over hard work. In addition to determining which groups were more likely to hold a fixed mindset, they looked at the effects of a fixed mindset on academic growth. They found that there were statistically significant differences in the achievement growth of students who held a fixed mindset and had initial low achievement than students who were high achievers and students who were low achievers but did not have a fixed mindset. This study suggests that low achieving students are more highly impacted by having a fixed mindset and therefore may benefit from directed mindset interventions. It is important to note that this study looked specifically at fixed mindset and the absence of a fixed mindset does not necessarily correlate with the presence of a growth mindset (Hwang et al., 2019).

A Classroom Culture of Growth Mindset

Fostering a culture of a growth mindset in a classroom takes more than just saying certain phrases as praise or encouragement in the face of failure. It requires an entire shift in expectations in order to show the students that the teacher truly believes they can all grow their abilities. Creating a growth mindset culture requires shifts in education about mindset, grouping/sorting of students, feedback and grading, norm setting in the classroom and providing authentic mathematical tasks.
Education about Mindset

One of the steps in creating a growth mindset culture in a school or classroom is educating students and parents about growth mindset and brain plasticity. Studies have shown that teaching middle schoolers about brain growth fosters the development of a growth mindset. Dweck (2008) created a growth mindset workshop in which there were two groups of seventh graders, both of which were taught study skills, but one was also taught about the brain. The group learning about the brain started out by reading an article titled “You Can Grow Your Intelligence: New Research Shows The Brain Can Be Developed Like a Muscle.” This article showed the students that they had to work at developing their intelligence and that they had to take some responsibility for their learning. Students in the growth mindset group were more motivated to learn and their teachers noticed and commented on their increased participation and willingness to work hard. Out of this hard work came higher math achievement than the group that had just learned the study skills (Dweck, 2008).

Educating parents on growth mindset also helps to foster a climate of a growth mindset. Many parents may be unaware of what ability mindset is, and they may not realize the impact their words of praise and reactions to failure have on their child’s success. Parents may try to reassure their children about school by expressing their past frustrations from school or a particular subject, but instead of reassuring their child, they are encouraging the formation of a fixed mindset. By teaching parents about what a growth mindset is, how the words they are saying are negatively impacting their child, and what to say instead to foster a growth mindset, parents will better be able to support the work schools are doing to teach growth mindset. At St. Luke’s School in Connecticut, administration created a blended learning course for parents to learn about growth mindset. They determined that a course would be more effective than a one-time speaker because it allowed parents to work on the course within a cohort, which allowed them to feel a sense of community and support. The feedback from this course was good, with parents feeling that they had a better understanding of what the teachers were saying to their children and why there might be certain comments on work sent home. They also felt that they had gained some tools to better help their children develop their growth ability mindset (Perry, 2019). When I do my presentation during parent open house each fall, I include a few words about how to help students develop a growth mindset about mathematics. I tell parents that it is going to be a very long seven years to graduation if their child begins to hate math now. I tell parents to be careful about what they say about math, to not tell their child they hate math or were never good at math and to instead encourage their child to work hard and ask questions if
they are having difficulty. A number of parents have thanked me for reminding them of how detrimental talking negatively about mathematics can be on their child’s mindset.

Grouping Students

How students should be grouped is a highly debated topic in education. Should students be heterogeneously groups with students of all abilities grouped together, or should students be homogeneously grouped with students of the same ability all grouped together? Many schools begin splitting math classes into high and low ability classes earlier than other subjects. While the pros and cons for each type of grouping are contentiously debated in many contexts, the research suggests that heterogeneous grouping is the best grouping for the fostering of a growth mindset. When students are grouped for ability in mathematics, it is often based on speed. Students who are faster at math are placed on advanced tracks that send them through the mathematics curriculum faster than the other students. This communicates to the students that speed is important in mathematics and that if they cannot do mathematics quickly, they are never going to be able to make it to advanced mathematics (Sun, 2018). This is an unfortunate mindset because good mathematical thinking is not about speed, it is about thinking deeply about problems and making connections, which often takes time. Often students are placed into these math class tracks and stay in that track for the rest of their schooling. As Boaler comments: “We can give no stronger fixed mindset message to students then we do by putting them into groups determined by their current achievement level and teaching them accordingly” (Boaler, 2016, p. 112). Grouping them by ability and then teaching based on that ability denies students labeled as low level achievers opportunities to learn higher level mathematics. How will students believe they are capable of learning high level material if they are denied the opportunity to even experience it?

Grouping students heterogeneously can help to eliminate some of the fixed mindset messages sent to students when done well. True heterogeneous grouping gives all students the opportunity to do high level mathematical tasks, thus instilling the expectation that all students can participate in mathematics. Heterogeneous groups also show that there are multiple dimensions to success in math class. Some students may be able to quickly compute numbers, other students may be able to make connections about problems, others may be able to explain their thinking well or understand what the problem is asking. In heterogeneous groups, these different strengths can be highlighted and the different students can work together and learn to see the value in the contributions of other students in the class (Sun, 2018).
The reality, however, is that teaching heterogeneous groups is challenging. Students will work at different speeds, have different levels of motivation, attention spans, preferred learning styles, attendance records, previous knowledge, language abilities, home situations, etc, and they will not naturally come together to learn from each other's differences. If not done correctly, the results could be disastrous to the ability mindset of the class. The low achievers could be intimidated by the high achievers and feel that they are never going to be able to keep up with them, so why would they even try to work hard? The high achievers also may feel superior to the low achievers and feel that they do not need to work hard because they have already achieved. Effectively teaching within a heterogeneous classroom structure in such a way that fosters a growth mindset, requires norm setting and a shift in mathematics teaching to ensure students are given authentic mathematical tasks that all students can access and also learn from.

Norm Setting

Classroom norms are the behavioral expectations of the students within a class. Growth mindset norms can be established through conversations and posters of rules, but are reinforced through actions and the consistency of the classroom teacher. The students need to know that the teacher believes in a growth mindset and is willing to enforce behavioral expectations that promote a growth mindset consistently. Sun (2018) describes the following norms as ones that are important in the establishment of a growth mindset: teaching about the brain, discussing how people learn, valuing mistakes, valuing struggle by tying it to learning and growing, and valuing risk taking (Sun, 2018). Teachers need to reinforce these norms daily by talking about and engaging deeply with mistakes through connections to the learning process and the math behind the mistake. They need to encourage questions from students and value students taking their time to think deeply about mathematics (Boaler, 2016, p. 172). In the midst of the pressure of high stakes testing, teachers often feel pressured to hurry through curriculum and therefore they value quick work instead of thoughtful connections and questions.

Establishing classroom norms that foster a growth mindset is challenging because it is not just the teacher who has to value things like mistakes, effort, struggle, and questions, the students also have to. To get middle school or high school students to respond nicely when another student makes a mistake is difficult. Establishing expectations at the start of the year is vitally important and so is giving students the tools they need to deal with mistakes made by
themselves and their classmates. I teach my sixth graders how to respectfully agree or disagree with their peers when working on problems. We discuss how it is important for everybody to learn from a mistake made by a classmate because when we understand the mistake and why it was a mistake, that knowledge can help keep us from making the same mistake or a similar one in the future. Learning about mistakes can also give us a deeper understanding of the correct answer. I teach my students that when we disagree with another person’s answer or process, we need to identify where our work or our thinking was different from theirs, and then think about whose work or reasoning is mathematically correct. Then we need to help whichever person made the mistake understand what the mistake was and why. To help others understand, we first have to understand, which deepens our mathematical knowledge. Sun (2018) wrote about a similar process a teacher she studied did with her class. In the class, when a student made a mistake, the teacher wrote the mistake on the board and had the class help with the process of finding and fixing the mistake. The students in the class reported that they liked being able to be a part of the process working through the mistakes because they got to interact with and learn from each other (Sun, 2018). By teaching students how to learn from their mistakes and the mistakes of others, teachers can help destigmatize mistakes - changing the mindset of mistakes from a belief that people who make mistakes are failures to a belief that people who make mistakes are effective learners.

Authentic and Open Mathematical Tasks

Often when people think about mathematics, they think about numbers, calculations, and formulas. These are just pieces of mathematics, but the origination of this partial view of mathematics comes from the classroom where students are typically asked narrow questions that are solved using a scripted procedure. These types of problems are narrow in their scope and often do not require deep mathematical thinking, as they merely require the memorization of procedures with little conceptual understanding of why the procedure works. It is difficult for students to have a growth mindset about math and their math abilities when the problems are narrow and they either understand them and get them correct, or they do not (Boaler, 2016 p. 180). Open mathematical questions that give the students opportunity to think deeply and explore concepts make mathematics more accessible to students because there are multiple access points to these types of questions, allowing every student to be able to think about the problem, and take it to the level that their current ability allows.
Math tasks can be changed from narrow to open by simply changing what the questions is asking the students to do. Instead of just asking them for the answer to a problem, ask them to represent their solutions visibly, explain why their answer makes sense, describe multiple methods for solving the problem, or give multiple representations/expressions of their solution (Boaler, 2016, p.180-181). By opening up a task to have multiple forms of an answer or many possible answers, students become more engaged because they feel like they have a chance at being able to work towards an answer and will not simply be right or wrong. However, in order for a student to progress through the mathematics curriculum, there is an element of needing to directly teach students procedures and rules. Therefore, there may be times where narrow questions are used to reinforce these procedures. These types of problems should not be the only types of problems students are exposed to (Boaler, 2016, p. 180).

Feedback and Grading

As already discussed, the type of praise given to children can impact the development of their ability mindsets. This is the case at school as well as at home. Teachers have the responsibility to praise and respond to the mistakes and failures of many students everyday. They must be mindful to use process praise and respond to failure out of a mindset that failure is a learning opportunity, much like parents. Teachers also have the unique opportunity to praise students in such a way that elevates their social standing. By giving specific praise for student behaviors and problem solving methods, teachers can raise the status of students and of the value of using different methods, elevating both the student and the mathematical thinking (Sun, 2018).

However, not all feedback is verbal praise. Another aspect of teaching is grading students. Grades have great power over a student’s view of themselves, learning, and school. Grades put a number on a student’s abilities and makes it incredibly easy for the students to them compare themselves to other people. The purpose of percentages and grades is to be able to easily compare scores and students, but this is having a detrimental effect on the ability mindsets of students. Grading policies differ drastically from teacher to teacher and from school to school. Some teachers allow makeups and re-dos of assignments while others only allow assignments to be done once and do not accept late work. Some teachers grade harshly while others less so. Regardless of the method of grading, studies have shown that letter and percentage grades negatively impact student learning. Students who were given diagnostic feedback instead of a grade on all of their assignments achieved higher than those students who were given grades.
Even students who were given both diagnostic feedback and a grade achieved lower than the comment group because they only cared about the grade (Boaler, 2016, p.143).

Grades are a required part of the teaching job. Teachers are required to assign grades to students that reflect how the child is performing in their class. However, grades are often indicative of more than just a child’s learning. Within grade calculations teachers put in grades for missing assignments, homework, class participation etc. These are not indicative of a child’s progression of learning but rather their organization, completion of assignments outside of school and their behavior in the classroom. While these are important things, if grades are to reflect learning, then they should reflect a student’s progress towards the standards. Standards based grading is a grading system that evaluates students specifically on how they are progressing in their learning of the standards by breaking the course into specific topics and standards that are covered. This breakdown does not include every single lesson taught, but breaks the curriculum into the general topics a student is expected to understand by the end of the year. Students are taught and then evaluated on their progress toward mastery. Progress is indicated on a scale that is typically between 3 and 6 points, with the lowest score meaning little to no mastery even with support, the middle scores ranging from an emerging or progressing understanding to meeting expectations or proficient and the higher scores being advanced and finally mastery. Different schools and teachers use different scores and terms for their standards based grading but the concepts are similar. The scores are based solely on a student’s understanding of the standard and therefore encourages a growth mindset because a student can always improve their understanding and change the score, they are not stuck with a low grade because they did not do well on a test (Ehlert, 2015). For schools using a traditional grading system, a standards based grading system can be translated into a standard grading system at the end of the semester by assigning the levels of mastery percentage points (Ehlert, 2015).

One of the most powerful ways a teacher can promote a growth mindset through grading is by allowing students to retake assessments and redo assignments. When students are not allowed to retake assessments, any work a teacher has done to teach students that mistakes were a good part of learning is negated because mistakes hurt them on assessments (Ehlert, 2015). By allowing retakes, the focus is placed on the learning and the ability to improve instead of a student being stuck with a low grade. This emphasis on improving fosters a growth mindset because student are given the opportunity to do better and grow their understanding (Sun,
A concern that allowing retakes brings up is if the ability to retake an assessment will decrease motivation for a student to work hard to learn the material the first time. There may be a tendency for students to put in little effort the first time to see how they do and then if they are not happy with the result, just retake the assessment. Allowing retakes also puts more work on the teacher. Simply giving the same exact assessment to a student over and over again will not test their mastery of a topic, it will test their mastery of that exact test. Therefore, teachers have to create multiple versions of each test which takes time and a great deal of thought. Retakes also create more grading for teachers and if they are to give effective feedback on the tests, this will take a lot of a time. Allowing retakes also requires time for the student to take the test, whether this be during class, after school, or during lunch. A student who cannot commit to time outside of class is then put at a disadvantage. One of the alternative options to retakes is allowing students to correct their mistakes on their tests, requiring them to explain their error or new reasoning. This encourages learning from mistakes, allows a student’s grade to improve, and does not require multiple versions of assessments nor extra time outside of the class period for a retake.

Conclusion

The plasticity of the brain is good news for the human race. It means we have the ability to learn and grow our brains, and are therefore are not stuck at an ability level. However, in order to tap into this potential, we have to take control of our learning and be motivated to persevere through struggles and learn from mistakes. Studies have shown that students who possess a growth mindset are more motivated to learn and therefore show better academic growth than their fixed mindset counterparts. Teachers and parents have the ability to help foster a growth mindset in children by providing them with opportunities to struggle, treating failure and mistakes as opportunities for learning, providing all students with opportunities to access high level problems and teaching them about the ability of their brains to grow. Mathematics teachers need to take growth mindset a step further and help students develop a growth mindset about mathematics. Many of the hindrances to developing a growth mindset about mathematics are ingrained in our culture and our education system, thus the reality is that there are factors outside of teachers
and students’ control that impact implementing some of the strategies for promoting a growth mindset. Large class sizes, lack of parental support, lack of administrative support, high stakes testing, language barriers, social issues, etc impact classrooms. However, growth mindset is important because if a child does not believe they can do any better than they currently are, they will not be motivated to succeed and often the students who do not think they can be successful are the ones causing issues with their behavior. Therefore, it is important that teachers make an effort to help motivate their students by fostering a growth mindset however they can within the constraints they are working in. With a concerted effort from teachers and parents, perhaps today’s students will grow to not fear and hate math and will know that the power to succeed is in their hands.

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